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THE MAY FLOODS OF 1886.

(Illustrated by a Map.)

IN these pages and in those of *British Rainfall* we have pleaded over and over again for the wider and more systematic employment of Flood marks. The excessive rains of the middle of the past month have produced floods which, over a large portion of England and Wales, were quite exceptional (especially considering the period of the year) and on some rivers unprecedented, or, at any rate, beyond any recorded precedent. We hope that the height of these floods will be duly marked on as many bridges and permanent buildings as possible. A horizontal line with a cross at each end and the date, is easily cut and tells its own tale—X $\frac{\text{May 16}}{1886.}$ X.

We are glad to hear that a paper upon these floods is being prepared for the Royal Meteorological Society by Messrs. Gaster and Marriott —we shall do all that we can to help them, and also to avoid running over ground which they will doubtless occupy better—for instance, Mr. Gaster's conversance with weather forecasting and the behaviour and may we say misbehaviour, of cyclonic systems renders him exceptionally able to deal with the *causes* of the enormous rainfall, while the number of records with which we are favoured gives us the best means of indicating the areas of most exceptional fall. We shall therefore, on the present occasion, deal with only two branches of the subject—*Total Rainfall* and *Flood Levels*, and at the end merely quote a few lines from *Nature* respecting the Cyclones, and print a few of the letters which we have received. The records of damage will doubtless be fully treated in Messrs. Gaster and Marriott's paper; the total must be enormous.

Stations at which the fall of rain on May 11th to 13th reached or exceeded 2 inches.

Div.	County.	Station.	11th	12th	13th	11–13
III.	Oxford	Oxford, Magdalen College	·35	1·25	·48	2·08
,,	,,	,, Radcliffe Observatory	·36	1·30	·51	2·17
,,	Northampton	Oundle	·36	·87	1·02	2·25
V.	Wilts	Warminster	·36	2·22	·47	3·05
,,	Somerset	Weston-super-Mare, High St.	·27	·97	·93	2·17
VI.	Gloucester	Clifton, South Parade	·28	1·07	·96	2·31
,,	,,	Bristol, Shirehampton	·35	1·11	·82	2·28
,,	,,	Stroud, Upfield	·32	1·72	·78	2·82
,,	,,	Gloucester, Llanthony Lock	·28	1·52	·90	2·70
,,	,,	,, Maisemore Lock	·34	1·64	1·01	2·99
,,	,,	Tewkesbury, Upper Lode	·30	1·31	1·10	2·71
,,	Hereford	Ross, The Graig	·28	1·70	1·40	3·38
,,	,,	Much Dewchurch, Bryngwyn	·30	2·64	1·86	4·80
,,	,,	Hereford	·27	1·65	3·50	5·42
,,	,,	Hope-u-Dinmore, Hampton Ct.	·25	1·90	2·03	4·18
,,	,,	Kington, Lynhales	·63	1·93	2·40	4 96
,,	Shropshire	Ludlow, Ashford	·37	2·22	?	?
,,	,,	Dowles, Bewdley*	1·16	2·03	·86	4·05
,,	,,	Cleobury Mortimer, Neen Savage	·33	2·08	2·32	4·73
,,	,,	Craven Arms, Stokesay Vic.	·54	2·20	2·57	5·31
,,	,,	Burwarton	·60	3·10	3·39	7·09
,,	,,	Bishop's Castle, Castle St.	·57	1·75	3·30	5·62
,,	,,	,, ,, More Rectory.	·47	1·67	3·59	5·73
,,	,,	Much Wenlock, Larden Hall	·35	2·75	3·30	6·40
,,	,,	Church Stretton, Preen Manor	·44	2·22	3·25	5·91
,,	,,	,, ,, Woolstaston.	·58	2·42	3·32	6·32
,,	,,	Middleton in Chirbury	·49	1·39	2·34	4·22
,,	,,	Much Wenlock, Willey Park	·50	2·04	2·21	4·75
,,	,,	Broseley, Benthall Hall	·50	2·04	2·21	4·75
,,	,,	Oswestry, Hengoed	1·58	1·92	1·60	5·10
,,	,,	Market Drayton, Buntingsdale	·39	·75	2·35	3·49
,,	Stafford	Abbots Bromley, Hoar Cross	·32	1·61	1·90	3·83
,,	,,	Cheadle, The Heath House	·27	1·20	1·65	3·12
,,	Worcester	Gt. Malvern, Madresfield	·31	1·98	1·76	4·05
,,	,,	Worcester, Diglis Lock	·25	1·85	1·65	3·75
,,	,,	,, Bevere Lock	·22	1·63	1·72	3·57
,,	,,	Droitwich, Holt Lock	·22	1·63	1·81	3·66
,,	,,	,, Ombersley	·17	1·52	1·40	3·09
,,	,,	Tenbury, Orleton	·28	2·23	2·12	4·63
,,	,,	Stourport, Lincombe Lock	·29	1·67	1·55	3·51
,,	Warwick	Stratford-on-Avon, Avonside	·30	1·20	·94	2·44
,,	,,	Coventry, Priory Row	·25	1·30	·96	2·51
,,	,,	,, Coundon	·27	1·40	1·05	2·72
,,	,,	Atherstone	·20	1·26	1·50	2·96
VII.	Leicester	Little Orton	·30	1·00	1·45	2·75
,,	,,	Loughborough, Victoria St.	·17	·81	1·39	2·37
,,	Rutland	Ketton Hall [Stamford]	·34	·78	1·51	2·63
,,	Lincoln	Horncastle, Bucknall	·13	·35	1·60	2·08
,,	,,	Brigg	·07	·58	1·44	2·09
,,	Nottingham	Newark	·13	1·05	2·03	3·21
,,	,,	Mansfield, Market Place	·13	1·43	2·00	3·56
,,	,,	Welbeck	·07	1·12	2·30	3·49

* Measured at 8 p.m.

Div.	County.	Station.	11th	12th	13th	11–13
VII.	Derby	Belper, Northfield	·17	1·81	1·26	3·24
,,	,,	Wirksworth, Holloway	·43	2·48	1·90	4·81
,,	,,	Chatsworth Gardens	·30	1·81	2·19	4·30
VIII.	Cheshire	Chester	·73	1·50	1·31	3·54
,,	,,	Frodsham, Foxhill	·84	1·24	1·36	3·44
,,	,,	,, Dunsdale	·66	·96	1·60	3·22
IX.	Yorks, W.R.	Wakefield, Stanley Vicarage	·07	1·40	1·00	2·47
,,	,,	Ripon, High Bank, Mickley	·03	1·59	·59	2·21
,,	,, E.R.	Houghton	·10	·20	1·86	2·16
,,	,, N.R.	Ingleby, Greenhow Vicarage	·01	·51	2·17	2·69
X.	Cumberland	Wythburn Vicarage	·75	·85	·84	2·44
XI.	Monmouth	Llanfrechfa Grange	·85	2·25	1·40	4·50
,,	,,	Abergavenny, Larchfield	·88	2·77	1·44	5·09
,,	Glamorgan	Cardiff, Ely	·65	·82	1·53	3·00
,,	,,	,, ,, Park Place	·66	1·22	1·01	2·89
,,	Carmarthen	Llandovery	·37	·68	1·47	2·52
,,	Pembroke	Castle Malgwyn, Llechryd	·63	·82	1·73	2·18
,,	,,	Clarbeston, Pentry Park	1·16	·16	1·06	3·38
,,	Cardigan	Aberayron, Dolaeron	·35	·62	1·51	2·48
,,	Brecknock	Hay, Gwern-y-fed	·43	1·06	2·31	3·80
,,	,,	Builth, Llanwrtyd Wells	·11	1·00	2·19	3·30
,,	,,	,, Abergwessin Vic	·73	1·61	2·44	4·78
,,	Radnor	Llanstephan	·77	1·11	1·82	3·70
,,	,,	Llandrindod Wells, Brynarlais	...	·68	1·56	2·24
,,	,,	New Radnor, Downton	·51	1·69	2·81	5·01
,,	,,	,, Penybont	·35	·70	2·11	3·16
,,	,,	,, Ednol	·51	1·52	2·53	4·56
,,	,,	,, Gwern-y-Arglwydd	·50	·90	3·10	4·50
,,	,,	Rhayader, Nantgwillt	·79	1·47	1·33	3·59
,,	Montgomery	Carno, Llanwnog	·55	·98	2·70	4·23
,,	,,	,, Tybrith	·82	1·10	2·23	4·15
,,	,,	Welshpool, Buttington Vic.	·90	1·30	2·65	4·85
,,	,,	Garthbibio, Rhos-y-perfedd	·41	1·97	·85	3·23
,,	Denbigh	Rosset, Trevalyn Hall	·91	1·65	1·36	3·92
,,	Merioneth	Corwen, Rhug Gardens	·10	·84	1·77	2·71
,,	Carnarvon	Llandudno, Warwick House	1·02	·81	·29	2·12
,,	Isle of Man	Douglas, Victoria Road	·64	2·27	·05	2·96
XX.	Tipperary	Derrycastle [Killaloe]	·98	·67	·44	2·09
XXI.	Wexford	Gorey, Courtown House	1·02	·45	1·11	2·58
,,	Dublin	Dublin, FitzWilliam Square	1·15	1·27	·45	2·87
,,	Meath	Navan, Balrath	1·09	2·08	...	3·17
XXII.	Mayo	Crossmolina, Enniscoe	1·24	·74	·09	2·07
XXIII.	Down	Kilkeel	1·02	2·50	·23	3·75
,,	,,	Seaforde	·86	2·48	·40	3·74
,,	,,	Waringstown	·72	2·05	·01	2·78
,,	,,	Newtownards	·89	2·12	·10	3·11
,,	,,	Donaghadee	·63	1·40	·14	2·17
,,	Antrim	Belfast, New Barnsley	·57	1·67	·03	2·27

On the map the total rainfall is given only to the nearest inch; this is an unusual course, but we believe that it greatly facilitates the seizing of the leading features of the geographical distribution of the fall.

Judging from the data already before us, there can be no question that the fall was heavier in the neighbourhood of Wenlock Edge and

the Brown Clee Hills, that is to say in the southern half of Shropshire, than anywhere else. Falls of upwards of 4 in. in the three days were, however, recorded in Monmouth, Hereford, Worcester, Radnor, Shropshire, Montgomery, Denbigh, and Derbyshire.

As regards the river basins over which it fell, the Severn, of course, had the lion's share; but it was not its head waters which would apparently be most swollen, but the part near Shrewsbury, and most of all its affluent the Teme, which joins the Severn a little below Worcester. It is extremely fortunate that this flood has come in 1886 instead of in 1885, for during the present year there is in full operation a system of rain and flood recording for the Severn watershed, organised by Mr. J. W. Willis Bund, which will very greatly add to the fulness of our final record of this great flood.

The Wye would also have a considerable flood, but we have at present no record of its volume.

The Warwickshire Avon, which flows into the Severn, would have but little flood, and this is borne out by the note respecting the smallness of the flood with which we have been favoured by Messrs. C. Lucy and Co.

The Don running through South Yorkshire, past Doncaster, was considerably flooded, the rainfall in N.E. Derbyshire being excessive.

FLOOD LEVELS.

GLOUCESTER—

			ft.	in.
May 15th, 9	p.m.,	depth of water at lock gates on the quay	21	6
,, ,, 11	,,	,, ,, ,, ,, ,,	21	7
,, 16th, 3.45	a.m.	,, ,, ,, ,, ,,	22	0
,, ,, 7.30	,,	,, ,, ,, ,, ,,	22	1
,, ,, 9	,,	,, ,, ,, ,, ,,	22	1½
,, ,, 4	p.m.	,, ,, ,, ,, ,,	22	1¾
,, ,, 8.30	,,	,, ,, ,, ,, ,,	22	2
,, ,, 8 40	,,	the tide caused it to rise half an inch.		
,, ,, 9	,,	no appreciable difference was manifested.		
,, ,, 11	,,	another quarter of an inch was registered	22	2¾
,, 17th, 6	a.m.	it had fallen 3½ inches.	21	11¼

In 1795 the river rose to 22 ft. 8½ in.
In 1852, Sept. 15 ,, 22 ,, 7 ,,
In 1877, Jan. 5 ,, 21 ,, 3 ,,

TEWKESBURY—The highest flood since 1852.

ROSS.—May 15th, flood on Wye 14 ft.

BROMYARD.—1886 flood 38 inches above the mark of 1852 in Knightwick Mill.

LEOMINSTER.—The arches of the bridge over the Arrow at its crossing Hereford Road were full, an event never known before; in 1835 there was a great flood, but not equal to 1886.

IVINGTON (NEAR LEOMINSTER).—Heavy flood in the Arrow in 1879, but not equal to 1886 by some feet.

LUDLOW.—The Teme supposed to be six or eight feet higher than ever known before.

STOKESAY.—River higher than ever known before.

MIDDLETON IN CHIRBURY.—Highest flood ever known in the river Camlad, an affluent of the Severn.

HENGOED, OSWESTRY.—Bridge carried away, and all my lower rooms flooded.

SHREWSBURY.—May 15th, noon, extreme height of flood at Welsh bridge, 16 feet.

WORCESTER—

			ft. in.	
May 11th,		Water in the Severn	4	above average summer level
,, 12th		,, ,, ,,	5	,, ,, ,, ,,
,, 13th,	7 a.m.	,, ,, ,,	2 6	,, ,, ,, ,,
,, ,,	4 p.m.	,, ,, ,,	10 0	,, ,, ,, ,,
,, ,,	8 ,,	,, ,, ,,	11 9	,, ,, ,, ,,
,, 14th,	7.15 a.m.	,, ,, ,,	14 3	,, ,, ,, ,,
,, ,,	11.40 ,,	,, ,, ,,	15 8	,, ,, ,, ,,
,, ,,	5.30 p.m.	,, ,, ,,	17 0 (nearly)	,, ,, ,,
,, 15th,	1 a.m.	,, ,, ,,	17 10*	,, ,, ,, ,,

WORCESTER, DIGLIS LOCKS.—The highest flood for 115 years, and only a few inches below that of 1770.

STRATFORD-ON-AVON.—Flood not nearly so great here as in the Severn at Worcester, &c. Here it was 2 ft. less than in 1875, and has often been exceeded.

NOTTINGHAM.—Last evening (Saturday), May 14th, the height of the water at the Trent Bridge was 30·70 feet, or, in other words, about 8 inches above the springing of the arches of the bridge, or 78·65 feet above mean sea level at Hull. This represents the highest flood but one of the present century. Two extraordinary floods occurred in the Trent Valley in the year 1875; the first was remarkable, not only for its height, but on account of the period of its occurrence—viz., in the month of July. The second, in October, was the highest flood of the present century, and the highest recorded Trent flood except that of 1795, which slightly exceeded it. The July flood attained its maximum height at the Trent Bridge, on Friday, the 23rd day of July at 7.30 a.m., at which time the water had risen to the springing of the large iron arches of the Trent Bridge, and was 77·95 feet above mean sea level at Hull, or 12 feet above the summer level of the Trent. The second, or October flood, attained its maximum height at the Trent Bridge on Friday, the 22nd day of October, at 10 a.m., at which time the water had risen 1 ft. 9 in. above the springing of the iron arches, and was 79·70ft. above mean sea level, or 18·75ft. above the summer level of the Trent. The following is a list of the several floods in the river Trent, and the height of each is given in feet and decimals at the Trent Bridge, Nottingham above mean sea level :—

1795, (estimated)	80·55 feet.
1852, November	79·37 ,,
1857, ...	77·38 ,,
1864, March	77·13 ,,
1869, December	78·45 ,,
1875, July	77·95 ,,
1875, October	79·70 ,,
1886, May	78·65 ,,

The estimated height of the 1795 flood is derived from several sources, having nearly coincident results. It is very extraordinary that after only five days' rainfall the water should have risen to such large dimensions.

The rise of the water in the Trent has been exactly 12¼ feet, *due to 120 hours' rain.*—M. OGLE TARBOTTON, *Consulting Engineer to the Corporation of Nottingham.*

* Highest since 1852, and only 6 in. below 1795.

BELPER.—Derwent in flood from 10 a.m. of 13th, and rose till 4.30 p.m., when it was higher than for about 40 years.

N.E. YORKSHIRE.—May 15th, p.m., the Derwent had risen to nearly 11 feet above summer level.

THE WEATHER OF THE ICE SAINTS FESTIVALS OF 1886.

In the British Islands the cold acquired its greatest intensity on the five days from May 11 to 15, and was coincident with a system of pressures which appeared in the Channel, and thence proceeded in a north-north-easterly direction through the North Sea to the south-west of Norway, which was reached on the 15th. It necessarily resulted from this distribution of pressure that northerly and easterly winds prevailed in these islands, and temperature fell correspondingly low. Over that large portion of the British Islands lying between lat. 52° and 58°, the mean temperature of the five days was at least 6°·0 under the average of the season, and in the central portion of this district, as at York and Barrow-in-Furness, it was 8°·3 under the average. On the other hand, in Jersey the defect from the mean was only 1°·5, and in Shetland 2°·5. At Barrow-in-Furness, on the 12th, the maximum temperature was only 39°·0. On this day snow fell over the higher districts of central and southern Scotland, in many places to the depth of several inches, and the cold was so intense that swallows and some other birds perished in thousands.

Meanwhile torrents of rain were being poured down continuously over wide districts of northern and central England. These rains were heaviest and most widespread on the 11th, 12th, and 13th, on each of these days upwards of an inch being recorded in many places. Mr. Scott states in the *Weekly Weather Report* that during these three days falls of 4·83 inches occurred at Churchstoke, Montgomeryshire; 4·36 inches at Hereford; 4·15 inches at Pershore, Worcestershire; 3·38 inches at Ross, Herefordshire; and 3·44 inches at Fassaroe, county Wicklow. Extensive and disastrous floods were the consequence. The railway traffic between Worcester, Hereford, and Malvern was suspended, and the whole of the united valley of the Severn and Teme, in the neighbourhood of Worcester, was laid under water. At Gloucester large numbers of the inhabitants were driven from their homes. The valley of the Trent presented the appearance of a vast lake, and the Midland Railway between Nottingham and Derby was submerged. Immense damage was done about Chester and along the estuary of the Dee, over the low grounds bordering the Humber, and over extensive tracts of Yorkshire,

A noteworthy feature of the storm is shown in the weather maps for the morning of the 13th, when the area of low pressure extending from west to east over the south of England was broken up and showed three satellite cyclones with still lower pressures, having their centres the first to the west of Brest, the second over Somersetshire, and the third over Kent,—these all evidencing great, well-marked, and sharp local differences in the distribution of temperature and vapour. Further, a most remarkable satellite cyclone was seen near Perpignan, in the south of France, which in all probability represented the small cyclone or tornado that about seven o'clock of the previous evening wrought such dreadful havoc in Madrid, causing 32 deaths, seriously wounding large numbers, variously estimated from 320 to 520 persons, and wrecking hundreds of houses.—*Nature*.

GREAT RAINFALL.

To the Editor of the Meteorological Magazine.

SIR,—The rainfall of last week was so excessive in this part of the kingdom, and the floods that followed were so extraordinary, that they deserve a record in your Magazine.

On Tuesday the 11th of May, after a very dark and gloomy day, small rain commenced falling before five in the afternoon, and continued, with slight intermissions, during which a few spots of rain fell, till 10 a.m. on the 12th, a thick steady fall of rain then set in, which continued without intermission, till 10 a.m. on the 14th, when it ceased; and before one o'clock the sun shone, disclosing the Clee hills and the Welsh mountains covered with snow, and the valley of the Teme filled with an immense flood.

The following is the amount of rain that was registered here on five days:—

	in.
10th	·140
11th	5·280
12th	2·225
13th	2·120
14th	·010
Total.....	4·775

The fall on the 12th and 13th is the largest fall in two successive days that I have ever recorded during 56 years. The nearest approach to it was in July, 1834, when 4·585 in. fell in four days, but the greater portion of this fell on the first day in a thunderstorm.

On the 14th, the River Teme was 4 ft. higher at Stanford Mill than it was in the great flood of November, 1852, and higher than it was in the greater flood of 1795.

At Tenbury the flood water was 5 ft. or 6 ft. deep in the principal streets, and all postal communication was cut off. Great damage was done to the shops, and one man was drowned in his kitchen. The water rose above the seats in the Parish Church. All communication between the two sides of the valley was cut off for more than 20 miles. Several of the bridges were swept away, and others greatly damaged, and rendered almost impassable, especially the Iron Bridge at Stanford.

On the 15th, the River Severn at Worcester rose above the mark of the great flood of 1795, and occasioned great damage.

I remain, yours very truly,

THOS. HENRY DAVIS.

Orleton, Tenbury, May 20th, 1886.

To the Editor of the Meteorological Magazine.

SIR,—I herewith send you particulars of the exceptional rainfall of the past few days.

Rain commenced to fall at 5.30 p.m. on the 11th, and continued without ceasing until 6 a.m. to-day, being a total of 60 hours. A heavy fall of snow occurred early this morning; on the Bishop's Castle Railway considerable damage has been done to the permanent way for a long distance, caused by overflow of the Onny River.

The following are my gauge measurements :—

	in
Tuesday, May 11th	0·57
Wednesday, May 12th.....	1·75
Thursday, May 13th	3·30
	5·62

In addition, ·17 in. fell on Monday the 10th.

This is the greatest fall I have registered in 15 years, and probably a larger amount than ever fell in this neighbourhood in the time. Road traffic is also greatly interrupted.—Yours truly,

E. GRIFFITHS.

Bishop's Castle, 14th May, 1886.

To the Editor of the Meteorological Magazine.

SIR,—I greatly regret that I am unable to give you a complete return of the extraordinary rainfall in May. The fall for the 11th was ·37 in., for the 12th 2·22 in., but on the morning of May 14th I was flooded with 16 in. of water in the hall from 2 a.m. till 2 p.m., and unable to get out of the house till 3 o'clock. I then found that something must have washed against the rain gauge and upset it, and the small fence which I had erected round it for its protection. Consequently the rain "measure" for Thursday and Friday are both wanting.

I have not yet been able to make exact measurements of the height of the flood, as the river has not yet sunk to its average condition. You may have some notion of the violence of the flood when I tell you that part of the garden was scoured away, the whole of the cultivated soil being removed, and this more than 12 feet above the ordinary level of the river.—Yours truly,

J. SELWOOD TANNER.

Ashford, near Ludlow, 10th June, 1886.

SUMMER AND WINTER IN A WEEK.

To the Editor of the Meteorological Magazine.

SIR,—The conditions of weather experienced during the period May 6th to May 13th were so very extraordinary, that a few facts relating thereto may not be without interest.

On the 6th and 7th the maximum shade temperatures were respectively 68°·8 and 66°·6, while the black bulb thermometer *in vacuo* registered 118°·2 and 121°·2. At 9 a.m. on the 7th, the dry bulb read 60°·8 and the wet bulb 39°·7, showing the unusual difference of 21°·1, the greatest I have ever recorded except on May 23rd, 1884, when, at 3.40 p.m., the readings were, dry 85°·0, wet 58°·0. These two days were beautifully fine and warm, but thereafter the weather rapidly changed for the worse. The cold, drizzling rain of the 8th, 9th, 10th and 11th, although sufficiently disagreeable, proved only the forerunner of worse things, for than, on the 12th and 13th, no more bitter and unpleasant weather occurred during the past winter. Rain, sleet, and soft snow, driven by biting blasts from the eastward,

prevailed on these days, and the mountains of the Lake district and those of the Pennine range were thickly covered with snow. From the 8th to the 13th there was not a single gleam of bright sunshine, while the maximum shade temperature fell to 42°·7 on the 11th, 40°·3 on the 12th, and 44°·0 on the 13th. The minima in the screen and on the grass on the 12th were 34°·0 and 32°·0. The 9 a.m. dry bulb reading on the same day was 38°·2, being 22°·6 lower than the corresponding value on the 7th. Vegetation has received a check which, in the case of some forest and fruit trees, will not be recovered this season, the newly opened leaves having been shrivelled and blackened, or blown about as on an autumn day. In the mountain districts hundreds of lambs succumbed to the intense cold of the 12th, and thousands of swallows and other summer migrants have perished.

THOMAS G. BENN, F.R.Met.Soc.

Newton Reigny Observatory, May 18th, 1886.

PERIODICAL RECURRENCE OF WARM SUMMERS.

To the Editor of the Meteorological Magazine.

SIR,—The weather cycle of 17 years, to which Mr. Gwilliam drew attention in your last number, ought to give us some periods of excessive heat in the summer of this year. In 1869 (17 years ago) we had a "warm summer of long duration," and if we go back from that year to the commencement of the present century, we find that there has been no interruption to the recurrence of hot weather after an interval of 17 years. Excessive heat occurred in 1852, 1835, and 1818, and in 1801 the summer was very hot in August and September. This shows a return of great heat, in each case, at the end of 17 years.

We seem to have a great many other weather cycles, which apply very well to summers. We have the recurring summer periods, or cycles, of 8, 10, 12, 19, 29, 39, 40, 68, and 136 years. Now it is a curious fact that all these cycles, except that of 19 years, appear to apply to the coming summer. Eight years ago we had the hot summer of 1878. Ten years ago we had the very hot summer of 1876. In 1874 (12 years ago) the summer was very hot. Then if we go back 29 years we find that the summer of 1857 was remarkably hot and fine. If we travel back 39 years we reach the very hot summer of 1847. And 40 years ago we had "the notably hot summer of 1846." In 1818 (68 years ago) we had an extremely hot and dry summer. In 1750 (136 years ago) most extraordinary heat occurred in the course of the summer. In that year, "from the 17th to the 21st of June, and from the 8th to the 12th of July, it was the hottest weather in the memory of man." With regard to the cycle of 425 years, referred to in my last letter, the weather of the year 1461 does not appear to be anywhere recorded. The number 136 is the least common multiple of 8 and 17; and as the recurring period of 8 years is almost as striking as that of 17 years, we ought to have

some waves of very great heat during the coming summer, notwithstanding the adverse influence of the late severe winter.

There is an astronomical cycle which corresponds to the meteorological one of 8 years. When a transit of Venus occurs after a long series of years, we have a recurrence of that phenomenon once after an interval of 8 years. A transit of that planet across the sun's disc occurred in 1761, and another transit happened in 1874, and in each case the phenomenon was repeated at the end of 8 years, viz., in 1769 and 1882. Another transit of Venus will occur in January, 2004, and will be repeated at the end of 8 years, in January, 2012.

In the period of 8 years, as well as that of 40 (which is a multiple of 8), we have a very good weather cycle. Warm summers occurred in 1800, 1818, 1819, 1826, 1827, 1834, 1842, 1850, 1851, 1857, 1865, 1868, 1870, 1873, and 1876; which heat returned in each case, 8 years after, viz., in the years 1808, 1826, 1827, 1834, 1835, 1842, 1850, 1858, 1859, 1865, 1873, 1876, 1878, 1881, and 1884. The recurrence of excessive heat after an interval of 40 years is equally emarkable.

Luke Howard had so good an opinion of the 17 year cycle that he predicted a return of the cold of 1816 for 1833, and the warm temperature of 1806 for 1823. The cool summer was repeated in 1833, but the warm season returned a year earlier than he expected, viz., in 1822.—Yours truly,

GEORGE D. BRUMHAM.

Barnsbury, May 31st, 1886.

ROYAL METEOROLOGICAL SOCIETY.

The usual monthly meeting of this Society was held on Wednesday evening, the 19th inst., at the Institution of Civil Engineers; Mr. W. Ellis, F.R.A.S., President, in the chair. Mr. L T. Cave and Rev. Clifford Malden, M.A., were elected Fellows of the Society.

The following papers were read:—1, "The Severe Weather of the Past Winter, 1885-6," by Mr. C. Harding, F.R.Met.Soc. The author showed that the whole winter was noticeable for exceptional cold, not so much on account of any extremely low temperatures experienced, as for the long period of frost and the persistency with which low temperature continued. In the south-west of England there was not a single week from the commencement of October to March 21st in which the temperature did not fall to the freezing point. In many parts of the British islands frosts occurred in the shade on upwards of sixty nights between the beginning of January and the middle of March, and during the long frost which commenced in the middle of February and continued until March 17th, the temperature fell below the freezing point in many places on more than thirty consecutive nights. At Great Berkhampstead, Hertfordshire frost occurred on the grass on seventy-three consecutive nights,

from January 5th to March 18th. The winter of 1885-86 was the only one in which there was skating on the water of the London Skating Club in Regent's Park in each of the four months, December to March, since the formation of the Club in 1830, and there are but four records of skating in March during the fifty-six years, and there is no record of so many days in March as in 1886.

It was shown that the total range of the temperature of the water of the Thames at Deptford from January 8th to March 20th was only 6°, whilst from March 1st to 19th the highest temperature was 36°·5, and the lowest 35°.

The temperature of the soil at the depth of 1 foot was generally only about 2° in excess of that of the air over the whole of England, and from March 1st to 17th the earth was colder than usual by amounts varying from 6°·3 at Lowestoft, to 8°·5 at Norwood. The facts brought together showed that the recent winter was one of the longest experienced for many years, and that in numerous ways it may be characterised as most severe.

2. "Description of an Altazimuth Anemometer for Recording the Vertical Angle as well as the Horizontal Direction and Force of the Wind," by Mr. L. M. Casella. Inasmuch as no current of air is absolutely horizontal, and in the positions in which anemometers are placed the wind is probably generally far from horizontal, it is obvious that the force recorded by the majority of pressure plates is merely the horizontal component of the wind, and not its total pressure. Mr. L. M. Casella has succeeded in doing that which we believe had never been even attempted before; he has constructed an anemometer in which not only is the pressure plate perpendicular to the wind, both as to altitude and azimuth, but the instrument records continuously all three elements. We consider anemometry to be in a very unsatisfactory state, but that Mr. L. M. Casella's is the best pressure anemometer out, which is saying a good deal.

3. "Earth Temperatures, 1881-1885 by Mr. W. Marriott, F.R.Met.Soc. This is a discussion of the observations of the temperature of the soil at various depths below the surface, which have been regularly made at 9 a.m. at several of the stations of the Royal Meteorological Society during the past five years. The results show that the temperature of the soil at 1 foot at nearly all the stations in the winter months is almost the same as that of the air, while in the other months of the year the temperature of the soil is higher than that of the air at all except the London stations.

4, "Note on the After Glows of 1883-84," by Mr. A. W. Clayden, M.A., F.R.Met.Soc. The author suggests that the after-glows were the result of the vapour erupted from Krakatao, and that the dust and other ejecta played but a secondary part in the production of the phenomena.

REVIEW.

Atlas samengesteld uit de Meteorologische Waarnemingen van het schoonerschip "Willem Barents," in de jaren, 1878-84. Utrecht, 1886.

THE Marine Branch of the Royal Meteorological Institute of the Netherlands has just issued a very neatly finished folio atlas, containing 20 variously coloured plates, in which are collected the results of observations made in the above ship, in the summers of 1878-84 in the Barents Sea—or that part of the Arctic Ocean included between Spitzbergen and Nova Zembla. The charts exhibit deep-sea-soundings, specific gravity, temperature of air and sea surface, winds, weather, and the limits of the ice, in a very clear manner; but we can only briefly refer here to one or two points mentioned in the text. The wind charts are referred to homogeneous areas, the winds being first grouped under eight points for each square degree, and afterwards all the squares are combined in which the same winds prevail, The charts show that in the months of June and July S.W. and S. winds were prevalent, while in July and August they were generally N. and E., especially on the coast of Nova Zembla. In the northern part of the Barents Sea the winds in September were exclusively between N. and S. through W. With regard to the condition of the ice, it was found that its position in any one year, taken in connection with the climate of northern Europe, gave no clue as to its position in a following year. The southern border in the different months varied considerably in different years, with perhaps some slight resemblance in August and September of some years. The years 1878-80 were the most favourable, and the years 1881, 1882 and 1884 very unfavourable for navigation. In 1881, especially, the ice in June and July lay very much to the south, being below lat. 70° in the long. of Greenwich, in June. (It will be remembered that the winter 1880-81 was exceptionally severe in the British Isles). The opposing currents, especially the cold Polar current and the warm Atlantic current, while struggling for the mastery, play a considerable part in causing the great differences in the position of the ice in June and July; while in the months of August and September the warmer water between 77° and 78° N. lat. is kept back by the strong flow of the Polar current, although in some years there is open water as far as Francis Joseph Land.

We cannot help thinking it is a pity that the traditions of the Institute have been departed from by the omission of a French translation of the Dutch text.

J. S. HARDING.

BAROMETRIC WELLS.

A correspondent suggests that credit for the facts in the letter on p. 57 should be given to *Ciel et Terre*, which devoted a page to the subject in the latter part of 1884. That article was however apparently founded on a paper in *Cosmos*, Vol. IX. No. 4, and whether even that was the "real original" or not we cannot say.

SUPPLEMENTARY TABLE OF RAINFALL, MAY, 1886.

[For the Counties, Latitudes, and Longitudes of most of these Stations, see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger	3·97	XI.	Castle Malgwyn	5·31
,,	Margate, Birchington...	2·97	,,	Rhayader, Nantgwillt..	7·19
,,	Littlehampton	4·57	,,	Carno, Tybrith	6·38
,,	Hailsham	3·49	,,	Corwen, Rhug	4·97
,,	I. of W., St. Lawrence.	3·43	,,	Port Madoc	4·26
,,	Alton, Ashdell.....	3·63	,,	I. of Man, Douglas	6·29
III.	Winslow, Addington ...	4·35	XII.	Stoneykirk, Ardwell Ho.	3·59
,,	Oxford, Magdalen Col...	4·57	,,	Melrose, Abbey Gate ...	4·76
,,	Northampton	3·92	XIII.	N. Esk Res. [Penicuick]	4·55
,,	Cambridge, Beech Ho...	3·40	XIV.	Ballantrae, Glendrishaig	4·00
,,	Wisbech, Bank House..	2·49	,,	Glasgow, Queen's Park.	2·33
IV.	Southend	2·37	XV.	Islay, Gruinart School..	2·30
,,	Harlow, Sheering	3·56	XVI.	St. Andrews, Pilmour Cot	3·78
,,	Rendlesham Hall	2·18	,,	Balquhidder, Stronvar..	4·03
,,	Diss	2·19	,,	Dunkeld, Inver Braan..	3·07
,,	Swaffham	2·67	,,	Dalnaspidal H.R.S. ...	4·82
V.	Salisbury, Alderbury...	3·29	XVII.	Keith H.R.S.	4·89
,,	Warminster	5·23	,,	Forres H.R.S.	3·58
,,	Calne, Compton Bassett	3·60	XVIII.	Strome Ferry H.R.S....	3·49
,,	Ashburton, Holne Vic..	4·71	,,	Tain, Springfield.....	2·64
,,	Holsworthy, Clawton...	3·44	,,	Loch Shiel, Glenaladale	4·87
,,	Hatherleigh, Winsford.	2·86	,,	S. Uist. Ardkenneth ...	1·25
,,	Lynmouth, Glenthorne.	3·96	,,	Invergarry	3·12
,,	Probus, Lamellyn	2·62	XIX.	Lairg H.R.S.	1·37
,,	Wincanton, Stowell Rec.	3·39	,,	Forsinard H.R.S.	3·13
,,	Taunton, Lydeard Ho...	4·95	,,	Watten H.R.S.	3·29
,,	Wells, Westbury.....	4·54	XX.	Dunmanway, Coolkelure	5·59
VI.	Bristol, Clifton	4·67	,,	Fermoy, Gas Works ...	3·26
,,	Ross	5·49	,,	Tralee, Castlemorris ...	2·98
,,	Wem, Sansaw Hall.....	...	,,	Tipperary, Henry Street	3·60
,,	Cheadle, The Heath Ho.	5·60	,,	Newcastle West	...
,,	Worcester, Diglis Lock	5·84	,,	Miltown Malbay.....	3·37
,,	Coventry, Coundon	4·60	XXI.	Gorey, Courtown House	4·64
VII.	Melton, Coston	4·50	,,	Navan, Balrath	5·39
,,	Ketton Hall [Stamford]	4·92	,,	Mullingar, Belvedere ...	...
,,	Horncastle, Bucknall ...	3·80	,,	Athlone, Twyford	3·47
,,	Mansfield, St. John's St.	6·34	XXII.	Galway, Queen's Col....	4·60
VIII.	Macclesfield, The Park.	5·51	,,	Clifden, Kylemore	6·24
,,	Walton-on-the-Hill.....	4·53	,,	Crossmolina, Enniscoe..	5·11
,,	Lancaster, South Road.	...	,,	Collooney, Markree Obs.	3·99
,,	Broughton-in-Furness ..	6·96	,,	Carrick-on-Shannon ...	1·96
IX.	Wakefield, Stanley Vic.	5·13	XXIII.	Rockcorry.....	3·47
,,	Ripon, Mickley	4·94	,,	Warrenpoint	4·82
,,	Scarborough.....	4·01	,,	Newtownards	5·29
,,	East Layton [Darlington]	4·98	,,	Belfast, New Barnsley .	5·48
,,	Middleton, Mickleton ..	3·46	,,	Cushendun	2·64
X.	Haltwhistle, Unthank..	4·21	,,	Bushmills	3·04
,,	Shap, Copy Hill	5·08	,,	Stewartstown	3·82
XI.	Llanfrechfa Grange	7·81	,,	Buncrana	2·99
,,	Llandovery	6·09			

MAY, 1886.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1870–9	Greatest Fall in 24 hours. Dpth	Date.	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Date	Min. Deg.	Date	No. of Nights below 32°. In shade.	On grass.
			inches	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	4·79	+ 2·87	1·27	24	19	75·3	7	31·6	1	1	6
II.		Maidstone (Hunton Court)...	2·72	+ ·70	1·13	12	16	...	...	...	...	...	...
,,		Strathfield Turgiss	4·40	+ 2·72	·91	12	21	73·9	9	29·3	4	4	6
III.		Hitchin	4·09	+ 2·10	1·01	12	18	72·0	8	26·0	1	2	...
,,		Banbury	4·75	+ 2·62	·87	12	20	72·0	7	30·0	1	1	...
IV.		Bury St. Edmunds (Culford)	2·75	+ ·85	·53	13	19	76·0	7	24·0	1	2	...
,,		Norwich (Cossey)	2·39	+ ·58	·57	13	17	74·0	7	26·5	1	2	3
V.		Weymouth(LangtonHerring)	2·51	...	·36	22	15	70·0	10	33·0	1	0	...
,,		Barnstaple.....	4·55	+ 2·45	·87	12	16	74·0	6*a*	33·5	1	0	...
,,		Bodmin	4·00	+ 1·16	·73	11	20	67·0	9	34·0	1	0	1
VI.		Stroud (Upfield)	4·90	+ 2·60	1·72	12	18	74·0	7, 9	37·0	13*b*	0	...
,,		ChurchStretton(Woolstaston)	9·49	+ 7·10	3·32	13	22	72·0	7	29·0	1	1	3
,,		Tenbury (Orleton)	7·11	+ 4·68	2·23	12	19	74·5	6	28·7	1	3	5
VII.		Leicester	4·90	...	1·01	13	19	...	...	...	...	...	...
,,		Boston	2·80	+ 1·03	·97	13	16	82·0	6	35·0	1	0	...
,,		Grimsby (Killingholme).....	3·86	+ 2·21	1·08	13	23	72·0	7	33·0	2	0	...
,,		Hesley Hall [Tickhill].....	5·56	...	1·65	13	24	76·0	6	29·0	2	...	...
VIII.		Manchester (Ardwick).....	5·52	+ 3·29	·70	12	23	71·0	7	36·0	1	0	...
IX.		Wetherby (Ribston Hall) ...	4·01	+ 2·19	1·08	13	12	...	...	...	...	...	...
,,		Skipton (Arncliffe)	6·33	+ 3·21	1·25	27	23	73·0	7	30·0	15	1	...
X.		North Shields	2·38	+ ·53	·89	27	19	71·5	6	29·0	2	1	2
,,		Borrowdale (Seathwaite).....	8·10	+ 1·12	1·91	27	20	...	...	...	...	...	...
XI.	WALES.	Cardiff (Ely).....	6·57	+ 3·97	1·53	13	18	...	...	...	...	...	...
,,		Haverfordwest	4·22	+ 1·53	·75	11*c*	18	68·0	6	30·0	1	2	11
,,		Plinlimmon (Cwmsymlog) ...	4·58	...	1·15	13	18	...	...	...	...	...	...
,,		Llandudno.....	4·18	+ 2·56	1·02	11	16	65·0	7	35·8	1	0	...
XII.	SCOTLAND.	Cargen [Dumfries]	4·21	+ 1·68	1·38	27	18	69·2	7	34·2	13*d*	0	...
,,		Jedburgh (Sunnyside).....	3·41	+ 1·62	1·07	27	19	71·0	7	30·0	2	4	...
XIV.		Douglas Castle (Newmains)	...	...	...	...	...	...	...	...	..	...	...
XV.		Lochgilphead (Kilmory).....	4·12	+ 1·36	·77	4	19	...	...	31·0	1*f*	6	...
,,		Oban (Craigvarren)	2·97	...	·69	17	18	68·5	23	34·0	1	0	...
,,		Mull (Quinish).....	2·47	...	·44	18	18	...	...	...	...	...	...
XVI.		Loch Leven Sluices	3·70	+ 1·41	1·00	21*e*	9	...	...	...	...	...	...
,,		Arbroath	2·63	+ ·86	·84	27	13	68·0	7*f*	33·0	1	0	...
XVII.		Braemar	4·83	+ 2·41	·81	20	20	64·8	7	24·0	2	6	13
,,		Aberdeen	4·10	...	·85	20	20	68·0	7	34·0	1	0	...
XVIII		Lochbroom	2·85	...	·61	27	20	...	...	...	...	...	...
,,		Culloden	3·29	+ 1·51	...	...	...	...	..	...	...	...	...
XIX.		Dunrobin	2·87	...	·70	14	15	60·0	22	31·5	1	1	...
,,		Kirkwall (Swanbister)..... ..	1·97	...	·60	20	20	54·6	5	30·9	31	...	...
XX.	IRELAND.	Cork (Blackrock).....	3·31	+ 1·15	·63	2	21	71·0	31	34·0	26	0	...
,,		Dromore Castle	4·74	...	1·35	5	15	70·0	30	33·0	12	0	...
,,		Waterford (Brook Lodge) ...	3·65	...	·57	23	21	63·0	31	29·0	1	1	9
,,		Killaloe	4·67	...	·64	23	21	67·0	22	32·0	1*g*	2	...
XXI.		Carlow (Browne's Hill)	3·75	+ 1·63	·87	11	21	...	...	...	...	...	...
,,		Dublin (FitzWilliam Square)	5·47	+ 3·75	1·27	12	21	67·4	5	35·8	1	0	5
XXII.		Ballinasloe	3·88	+ 1·47	1·06	11	21	63·0	5, 6	31·0	13*h*	3	...
XXIII		Waringstown	5·73	+ 3·62	2·05	12	22	72·0	6, 7	32·0	12	1	1
,,		Londonderry (Creggan Res.).	2·34	...	·30	10	21	...	...	...	...	...	...
,,		Omagh (Edenfel)	3·32	+ ·97	·59	17	23	64·0	6	34·0	25	0	6

And 7, 10. *b* And 14. *c* And 13, 19. *d* And 16, 27. *e* And 28. *f* And 19. *g* And 13. *h* And 15.
+ Shows that the fall was above the average ; —that it was below it.

METEOROLOGICAL NOTES ON MAY, 1886.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail S for Snow.

ENGLAND.

STRATHFIELD TURGISS.—The wettest May ever recorded here; agricultural prospects improved considerably by the heavy rains in the middle of the month, although in some districts there were floods; crops generally made good progress. TS on 19th.

BANBURY.—Mean temp. (50°·5) 2°·1 below the average; H on 15th; high wind on 11th and 12th.

CULFORD.—The temperature during May was very changeable, ranging from 76°·0 to 24°·0; everything was very backward at the close. T and L on 23rd and 30th; high wind on 17th.

COSSEY.—The shade temp. at 9 a.m. on the 8th, was 64°·0, the max. between noon and 1 p.m. 70°·5, and the reading at 9 p.m. 47°·0, showing a fall of 23°·5 in 8 hours.

LANGTON HERRING.—Rainfall ·73 in. above the average of 11 years; mean temp. (54°·4), 0°·8 above the average of 14 years. Here we quite escaped the floods and storms which prevailed in many parts of the country. TS on 31st; solar halos on 7th, 9th and 30th; fog on 16th and 23rd; very high wind on 27th.

BODMIN.—A month of singularly favourable weather. Mean temp. 53°·7.

STROUD.—A wet cold month; flowers and fruit very backward; T showers with H on 27th; high wind on 18th.

WOOLSTASTON.—After a week of fine dry weather the remainder of the month was very wet, the incessant downpour of the 12th and 13th being without precedent. The disastrous floods which resulted will long be remembered; several bridges (railway and other) were destroyed, and whole gardens with all their fruit trees were washed away. Mean temp. 50°·0.

ORLETON.—The weather was very fine and generally bright, with a temperature about 3° above the average till the 10th, when R commenced in the evening, and it became cold. Small R set in about 5 p.m. on the 11th, and continued almost without intermission for 64 hours, during which 4·64 in. fell. This produced the greatest flood on the river Teme since 1770. Much of the fall on the 13th was S which covered the Clee Hills and all the Welsh mountains, or the flood would have been higher. The remainder of the month was cold and stormy. Mean temp. nearly 2°·0 below the average; distant T on 20th, 25th and 29th; solar halo on 2nd; pear trees generally in blossom on 6th and apple trees about 23rd.

LEICESTER.—The weather after the first nine days was very cold and wet, rain falling on 19 days.

KILLINGHOLME.—The cold retarding weather which characterized April continued through May. After the first week there was scarcely a day without rain, and cold nights had injurious effects on the growing corn.

MANCHESTER.—The first week was warm and dry, after which the weather changed and became very cold, raw and wet, continuing so to the end, although towards the latter part the temp. rose slightly; the 12th and 13th were very stormy and cold, and altogether the weather was very unseasonable.

WALES.

HAVERFORDWEST.—May commenced as April ended, cold and ungenial; from the 11th to the 18th, a very stormy period occurred with rather low mean temp. The rainy character of the month told beneficially on grass lands, but otherwise hindered agriculture. The oak was in leaf a fortnight before the ash, though in some situations the difference was much less; white thorn was in blossom on the 25th, prevailing winds S.S.E., W., and N.W.

LLANDUDNO.—The mean temp. of the month (50°·7) was 2° below the average, and there was a wave of exceptionally cold weather on the 13th and 14th, the max. on the former date being 46°·0, and on the latter 45°·2 only. The month was ushered in by a moderate temp. of 50°·3, but on the 2nd it suddenly

rose to 61°·0, and continued to rise till the 7th, on which day 65°·0 was registered; on the 8th the temp. as suddenly fell to 55°·5, and did not again reach 60°·0 during the month. As regards range of temp. the daily (11°·9) was 2°·3, and the monthly (28°·0) 5°·2 below the average. There was no frost, but S was frequently seen on the distant hills. The most exceptional feature of the month, however, was its rainfall; for two days in succession (11th and 12th) there was a daily fall of over an inch, and on the 13th the fall was nearly half an inch, an occurrence which I have never before witnessed in Llandudno, the R being almost continuous and accompanied by a leaden sky and a strong cold wind from the E. Polar winds, N. and E. were perhaps more prevalent than usual, but were tempered to some extent by bright sunshine, of which there were 149 hours during the month.

SCOTLAND.

CARGEN.—The mean temp. (47°·7) is the lowest experienced in May for 26 years with the exception of 1869, when the mean temp. was 46°·8. The hills from about 800 ft. above sea level were covered with S on the 12th and 13th. The temp. of every month this year has been below the average; the mean for the five months being 3°·6 below the average. The rainfall has been 2·62 in. above, and the hours of bright sunshine 72 below the average. Solar halo on 7th; S, sleet and R on 12th; H on 16th; distant T on 30th.

JEDBURGH.—The weather of the month was generally very wet and cold; fruit blossom was nearly three weeks later than usual, and flowers in gardens were also late; grass lands late also, but owing to R looked fresh; night temp. low. Sleet showers fell during the 12th, and at night fully half an inch of S lay on the ground; high wind on 18th.

QUINISH—A cold, unsettled, backward month throughout.

BRAEMAR.—A cold month, vegetation being very much retarded.

ABERDEEN.—The weather throughout the month was very wet, showing an excess of rainfall of more than two inches over the average. Brilliant aurora was seen on the night of the 8th.

LOCHBROOM.—The coldest May on record; even while the sun shone the air was piercingly cold; S and sleet fell often in the valleys, and very frequently lay on the hills, and frost occurred almost every night.

IRELAND.

BLACKROCK.—A month of "many weathers," sometimes fine and bright, at others wet and cold, with H and distant T. Notwithstanding a late spring, vegetation made satisfactory progress. High wind on 17th.

DROMORE.—Very heavy H showers occurred during the month, and at times it was very hot; S on mountains in the middle of the month; vegetation made good progress.

WATERFORD.—A very cold and backward spring, with rainfall more than an inch above the average. Mean temp. 47°·7. The trees were dreadfully blighted by a S.W. gale on 17th, some of them losing nearly all their leaves on the side facing the wind. S on the Comeragh and Jaltee mountains on 15th; fog on 6th, 19th and 24th; H on 26th and 27th; corncake heard on 2nd.

KILLALOE.—The coldest May for ten years, the mean temp. (49°·9) being 3° below the average: rainfall much above the average.

DUBLIN.—A cold, unsettled, showery month with very heavy rainfall. Considering that May, on the average, is the driest month of the year in Dublin, the exceptional nature of the rainfall this month is thrown into bold relief, and a further noteworthy feature is the fact that more than an inch of R fell on each of two consecutive days, 1·15 in. on the 11th, and 1·27 in. on the 12th. This is altogether a phenomenal downpour for May. The other leading characteristics of the month were cloudy skies and N.E. or E. winds. Sleet on 12th; H on 14th, 26th and 28th; fog on 6th, 8th and 9th; solar halos on 1st, 6th, 7th and 16th; E. gale on 12th; high wind on 8 days. Mean humidity 81; mean amount of cloud 6·8.

EDENFEL.—The second week was remarkably cold, wet and inclement with strong drifting sleet, R and H; the mean temp. of the 11th and 12th was 38°·0 and 36°·0 respectively; with this exception the weather of the month was of the "wet and windy," and sufficiently mild character that promises abundant after-vegetation.